APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,752	09/21/2005	Atsuyoshi Yano	1163-0541PUS1	1338

2292   7590   07/28/2008
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EXAMINER
FAULK, DEVONA E

ART UNIT	PAPER NUMBER
2615	

NOTIFICATION DATE	DELIVERY MODE
07/28/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/549,752	YANO, ATSUYOSHI
	Examiner	Art Unit	
	DEVONA E. FAULK	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 April 2008</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,5,10-12,15,20 and 21</u> is/are pending in the application.

    4a) Of the above claim(s) <u>3,4,6-9,13,14 and 16-19</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,5,10-12,15,20 and 21</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>21 September 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
            application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 4/28/08 have been fully considered but they are not

persuasive. The applicant has amended the claims to recite " wherein said filter factor

calculating means and said tone control filter are independently formed by calculating

said fixed filter factor prior to inputting the sound signal to the tone control filter" and

asserts that prior art Vahatalo's noise value components are not fixed filter coefficients

that are calculated prior to inputting the sound signal into a tone control filter.   The

applicant further asserts that "

Although Vahatalo describes a component weighting coefficient va in column 8,

(the equation (19)), this coefficient va does not correspond to the fixed filter factor of the

Applicant's invention, i.e., the factor for the purpose of tone control, because the

coefficient va defines whether frequency components are important or unimportant

while distinguishing between sound signal and noise in the VAD decision.

Therefore, for at least these reasons, it is respectfully submitted that the claimed

invention is distinguished from Vahatalo.

        The applicant also asserts that "

Second, the alleged combination of Aso and Vahatalo would destroy the functionality of

Aso. As demonstrated above, Vahatalo uses LPC coefficients and Aso uses an LMA

filter (see col. 6, line 64 of Aso). As described in the "Background of the Invention"

section of the instant application, an LMA filtering having a filter factor which is an LPC

coefficient to which a cepstrum is converted, a ripple appears and becomes a factor to

reduce the accuracy of a tone control apparatus. (See page 2, line 28-page 3, line 6 of

the specification.) Thus, one having an ordinary skill in the art would not be motivated to

combine Aso and Vahatalo.".

The examiner disagrees.

Regarding the applicant's assertion that Vahatalo describes a component

weighting coefficient va in column 8, (the equation (19)), and that this coefficient va

does not correspond to the fixed filter factor of the applicant's invention. The examiner

asserts that prior art Aso discloses a filter factor inputted to a tone control filter (

cepstrum coefficients are input to synthesizing filter unit 16; See Aso as applied above

in claim 1; column 3, lines 28-33; the synthesis filter can be a LMA filter , column 6, lines

61-64). Aso fails to disclose that the filter factor (coefficient) is a fixed filter factor

calculated prior to inputting the sound signal to the tone control filter. . Vahatalo was

only cited for teaching of a fixed filter factor calculated in advance.   Vahatalo discloses

that the index values of the lowest and highest frequency components and that vs is the

component weighting coefficient are all predetermined and stored in advance in a

memory (see column 8, lines 50-52).   This reads on fixed filter factor calculated

independently and in advance.   The examiner asserts that Aso as modified by

Vahatalo reads on the newly recited claim language.

In response to applicant's argument that there is no suggestion to combine the

references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in

the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re*

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, prior art Aso

discloses .a tone control apparatus which constitutes a tone control filter having a

desired characteristic by inputting a filter factor into said tone control filter, and which

adjusts a sound signal by making the sound signal pass through said tone control filter

characterized in that said tone control apparatus comprises: a smoothing means for

smoothing a Fourier spectrum of a desired filter response (analysis unit 1 of Figure

includes a spectrum envelope generation unit 9 (see Figure 2) that determines the

logarithmic spectrum; column 3, lines 11-14); a cepstrum calculating means for

calculating a cepstrum from the Fourier spectrum smoothed by said smoothing means

(parameter conversion unit 2 of Figure 1 includes a cepstrum conversion unit 12 (see

Figure 3) that determines the cepstrum coefficients by an inverse FFT operation on the

mel logarithmic spectrum envelope, column 5, lines 8-12; taking the inverse FFT on the

mel logarithmic spectrum envelope reads on calculating a cepstrum) ; and a filter factor

calculating means for calculating said filter factor based on the cepstrum calculated by

said cepstrum calculating means (the cepstrum conversion unit 12 also reads on a filter

factor calculating means; the cepstrum conversion unit 12 (see Figure 3) generates

cepstrum coefficients from the logarithmic spectrum envelope; column 3, lines 18-23;

the coefficients reads on filter factor) and a tone control filter (synthesis unit 3 of Figure

1 includes a synthesizing filter unit 16 ,see Figure 4, that forms a synthesized speech

wave from the cepstrum coefficients; column 3, lines 28-33; the synthesis filter can be a

LMA filter , column 6, lines 61-64). Aso discloses a filter factor inputted to a tone control filter (cepstrum coefficients are input to synthesizing filter unit 16; See Aso as applied above in claim 1). Aso fails to disclose that the filter factor (coefficient) is a fixed filter factor calculated prior to inputting the sound signal to the tone control filter.

Vahatalo teaches of fixed filter coefficients calculated in advance (column 8, lines 50-52).   The examiner's motivation to combine was/is that it would have been obvious to modify Aso so that the coefficients are calculated in advance as taught by Vahatalo to facilitate faster processing. It is known in the art that having data stored and retrievable for processing enables faster processing of a device or system.

2.   Regarding the restriction set forth in the previous office action, the applicant asserts that the examiner failed to establish the absence of a technical relationship among the inventions that involves at least one common or corresponding technical feature as required by MPEP 1893.03(d) and requests that the election requirement be withdrawn. The examiner agrees that the restriction should have been made according to the manner required by MPEP 1893.03(d). The examiner maintains the restriction is still proper and a lack of unity will be set forth in this action. The examiner has rewritten the restriction so that it conforms to MPEP 1893.03(d).

During a telephone conversation with Ali Imam (Reg. No. 58755) on 2/7/2008 a provisional election was made with traverse to prosecute the invention of Species 1, claims 2 and 5, based on the election/restriction set forth in the previous office action.

Claims 6-9,13,14,16-19 are withdrawn as being drawn to a non-elected species. Claims 1,10-12,15,20 and 21 are examined on the merits.

3.   Claim 2 is cancelled and claims 10-21 are new.

Election/Restrictions

4.   Restriction is required under 35 U.S.C. 121 and 372.

5.   This application contains claims directed to more than one species of the generic

invention. These species are deemed to lack unity of invention because they are not so

linked as to form a single general inventive concept under PCT Rule 13.1.

        The species are as follows:

        Species 1: 1st embodiment (see page 5, line 7-page 9).

        Species 2: 2nd embodiment (see page 10-page 11, line 18) .

        Species 3: 3rd embodiment (see page 11, line 20- page 15, line 7)).

        Species 4: 4th embodiment (see page 15, line 9-page 18,line 3).

        Species 5: 5th embodiment (see page 18, line 5- page 22, line 13)

        Species 6: 6th embodiment (see page 22,line 15-page 23).

6.   The claims are deemed to correspond to the species listed above in the following
manner:

        Species 1: Claims 5, 15 are drawn to a 1st embodiment (see page 5, line 7-

        page 9).

        Species 2: Claims 6 and 16 are drawn to a 2nd embodiment (see page 10-page

        11, line 18) .

      Species 3: Claims 7 and 17 are drawn to a 3rd embodiment (see page 11, line 20- page 15, line 7)).

      Species 4: Claims 3,8, 13 and 18 are drawn to a 4th embodiment (see page 15, line 9-page 18,line 3).

      Species 5: Claims 4 and 14 are drawn to 5th embodiment (see page 18, line 5- page 22, line 13)

      Species 6: Claims 9 and 19 are drawn to a 6th embodiment (see page 22,line 15- page 23).

The following claim(s) are generic: Claim 1, 10,11,12,20,21.

.
7.   The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

      Species 1 has the technical feature of a means for smoothing includes a means for smoothing the Fourier spectrum by filtering a series of sampled values of the Fourier spectrum with a low pass filter according to the 1st embodiment. Species 2 has the technical feature of a means for smoothing the Fourier spectrum by replacing each odd or even-numbered sampled value of the Fourier spectrum with an average of sampled values adjacent to each odd or even-numbered sampled value according to the 2nd embodiment. Species 3 has the technical feature of wherein said apparatus includes a means for detecting a change point of the Fourier spectrum of the desired filter

response, which changes steeply, and for smoothing a certain range of the Fourier

spectrum with its center being at the change point according to the 3rd embodiment.

Species 4 has the technical feature of wherein said apparatus includes a means for

detecting a change point of the Fourier spectrum of the desired filter response, which

changes steeply, and for smoothing a certain range of the Fourier spectrum with its

center being at the change point according to the 4th embodiment.   Species 5 has the

technical feature of wherein said apparatus includes a means for determining the

desired filter response based on a result of analysis of the sound signal while the sound

signal is inputted into the tone control filter according to a 5th embodiment. Species 6

has the technical feature of wherein the tone control filter is an IIR filter, and a linear

prediction coefficient to which the cepstrum is converted is set as the filter factor of the

tone control filter according to a 6th embodiment.

     Applicant is required, in reply to this action, to elect a single species to which the

claims shall be restricted if no generic claim is finally held to be allowable. The reply

must also identify the claims readable on the elected species, including any claims

subsequently added. An argument that a claim is allowable or that all claims are

generic is considered non-responsive unless accompanied by an election.

     Upon the allowance of a generic claim, applicant will be entitled to consideration

of claims to additional species which are written in dependent form or otherwise include

all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

are added after the election, applicant must indicate which are readable upon the

elected species. MPEP § 809.02(a).

During a telephone conversation with Ali Imam (Reg. No. 58755) on 2/7/2008 a

provisional election was made with traverse to prosecute the invention of Species 1,

claims 2 and 5, based on the election/restriction set forth in the previous office action.

Claims 6-9,13,14,16-19 are withdrawn as being drawn to a non-elected species.

Claims 1,10-12,15,20 and 21 are examined on the merits.

Claim Rejections - 35 USC § 112

8.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

9.   Claim 12 recites the limitation "said tone control factor" in line 7. There is

insufficient antecedent basis for this limitation in the claim. The examiner believes it

should recite " said filter factor".

. Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 1,10,11,12,20,21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Aso (US 5,485,543) in view of Vahatalo et al. (US 5,963,901).

Regarding claim 1, Aso discloses a tone control apparatus which constitutes a tone control filter having a desired characteristic by inputting a filter factor into said tone control filter, and which adjusts a sound signal by making the sound signal pass through said tone control filter (Figures 1-4, with Figure 2 illustrating the analysis unit 1 of Figure 1, Figure 3 illustrating the parameter conversion unit of Figure 1 and Figure 4 illustrating the synthesis unit of Figure 1), characterized in that said tone control apparatus comprises:

a smoothing means for smoothing a Fourier spectrum of a desired filter response (analysis unit 1 of Figure includes a spectrum envelope generation unit 9 (see Figure 2) that determines the logarithmic spectrum; column 3, lines 11-14);

a cepstrum calculating means for calculating a cepstrum from the Fourier spectrum smoothed by said smoothing means (parameter conversion unit 2 of Figure 1 includes a cepstrum conversion unit 12 (see Figure 3) that determines the cepstrum coefficients by an inverse FFT operation on the mel logarithmic spectrum envelope, column 5, lines 8-12; taking the inverse FFT on the mel logarithmic spectrum envelope reads on calculating a cepstrum) ; and

 a filter factor calculating means for calculating said filter factor based on the cepstrum calculated by said cepstrum calculating means (the cepstrum conversion unit 12 also reads on a filter factor calculating means; the cepstrum conversion unit 12 (see Figure 3) generates cepstrum coefficients from the logarithmic spectrum envelope; column 3, lines 18-23; the coefficients reads on filter factor)

and a tone control filter (synthesis unit 3 of Figure 1 includes a synthesizing filter unit 16

,see Figure 4, that forms a synthesized speech wave from the cepstrum coefficients;

column 3, lines 28-33; the synthesis filter can be a LMA filter , column 6, lines 61-64).

Aso discloses a filter factor inputted to a tone control filter (cepstrum coefficients are

input to synthesizing filter unit 16; See Aso as applied above in claim 1).

Aso fails to disclose that the filter factor (coefficient) is a fixed filter factor calculated

prior to inputting the sound signal to the tone control filter.

Vahatalo teaches of fixed filter coefficients calculated in advance (column 8, lines 50-

52). It would have been obvious to modify Aso so that the coefficients are calculated in

advance as taught by Vahatalo to facilitate faster processing.

    Regarding claim 10, Aso as modified discloses wherein said smoothing means is

utilized for smoothing a power spectrum of a desired filter response; and

said cepstrum calculating means calculates a cepstrum from the power spectrum

smoothed by said smoothing means (Aso's spectrum envelope generation unit 9 is

smoothing the power spectrum ,column 4, lines 15-65; furthermore, the real part of a

cepstrum uses the magnitude of the spectrum). Therefore, all elements of claim 10 are

comprehended by the rejection of claim 1.

    Regarding claim 11, the examiner asserts that smoothing and the log square are

well known in the art. It would have been obvious to smooth the log square magnitude

for the benefit of creating an approximation that captures any important patterns in the

data.

Regarding claim 12, Aso discloses A tone control method for inputting a filter

factor into a tone control filter, and adjusting a sound signal by making the sound signal

pass through said tone control filter, said tone control method comprises:

smoothing a Fourier spectrum of a desired filter response (analysis unit 1 of Figure

includes a spectrum envelope generation unit 9 (see Figure 2) that determines the

logarithmic spectrum; column 3, lines 11-14);

calculating a cepstrum from the smoothed Fourier spectrum means (parameter

conversion unit 2 of Figure 1 includes a cepstrum conversion unit 12 (see Figure 3) that

determines the cepstrum coefficients by an inverse FFT operation on the mel

logarithmic spectrum envelope, column 5, lines 8-12; taking the inverse FFT on the mel

logarithmic spectrum envelope reads on calculating a cepstrum) ; and\

calculating said filter factor based on the calculated cepstrum (the cepstrum conversion

unit 12 also reads on a filter factor calculating means; the cepstrum conversion unit 12

(see Figure 3) generates cepstrum coefficients from the logarithmic spectrum envelope;

column 3, lines 18-23; the coefficients reads on filter factor), and

a tone control filter (a tone control filter (synthesis unit 3 of Figure 1 includes a

synthesizing filter unit 16 ,see Figure 4, that forms a synthesized speech wave from the

cepstrum coefficients; column 3, lines 28-33; the synthesis filter can be a LMA filter ,

column 6, lines 61-64).

Aso discloses a filter factor inputted to a tone control filter (cepstrum coefficients are input to synthesizing filter unit 16; See Aso as applied above in claim 1).

Aso fails to disclose that the filter factor (coefficient) is a fixed filter factor calculated prior to inputting the sound signal to the tone control filter.

Vahatalo teaches of fixed filter coefficients calculated in advance (column 8, lines 50-52). It would have been obvious to modify Aso so that the coefficients are calculated in advance as taught by Vahatalo to facilitate faster processing.

Regarding claim 20, Aso as modified discloses smoothing a power spectrum of a desired filter response; and calculating a cepstrum from the smoothed power spectrum (Aso's spectrum envelope generation unit 9 is smoothing the power spectrum ,column 4, lines 15-65; furthermore, the real part of a cepstrum uses the magnitude of the spectrum). Therefore, all elements of claim 10 are comprehended by the rejection of claim 12.

Regarding claim 21, the examiner asserts that smoothing and the log square are well known in the art. It would have been obvious to smooth the log square magnitude for the benefit of creating an approximation that captures any important patterns in the data.

12.   Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aso (US 5,485,543) in view of Vahatalo et al. (US 5,963,901) in further view of Ho (US 5,495,432).

Regarding claim 5, Aso as modified teaches of smoothing means for smoothing a Fourier spectrum by filtering a series of sampled values of the Fourier spectrum. Aso as modified fails to disclose smoothing by using a low pass filter. Ho teaches of smoothing with a low pass filter (column 11, line 35-38). It would have been obvious to modify Aso by using a low pass filter to smooth the Fourier spectrum to improve the convergence performance.

Conclusion

13.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DEF

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615